

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment		Work Assignment Number 4-14 <input type="checkbox"/> Other <input type="checkbox"/> Amendment Number								
Contract Number EP-D-11-006		Contract Period 04/29/2011 To 03/31/2015 Base Option Period Number 3								
Contractor EASTERN RESEARCH GROUP, INC.		Title of Work Assignment/SF Site Name Literature Review								
Specify Section and paragraph of Contract SOW		Period of Performance From 12/29/2014 To 03/31/2015								
Purpose <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input checked="" type="checkbox"/> Work Plan Approval										
Comments The work plan dated 1/15/15 has been reviewed and we concur with the labor mix, technical hours (158), ODCs, total estimated costs \$15,301 and completion date 03/31/15 as specified. No previous performed work shall be duplicated.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
Note: To report additional accounting and appropriations data use EPA Form 1900-ESA.										
SFO (Max 7) <input type="checkbox"/>										
#	DCN (Max 6)	Budget FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period		Cost/Fee		\$0.00		LOE		0		
04/29/2011 To 03/31/2015										
This Action				\$15,301.00				158		
Total				\$15,301.00				158		
Work Plan / Cost Estimate Approvals										
Contractor WP Dated		01/15/2015		Cost/Fee		\$15,301.00		LOE 158		
Cumulative Approved				Cost/Fee		\$15,301.00		LOE 158		
Work Assignment Manager Name Sangdon Lee							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number 919-541-4531			
							FAX Number:			
Project Officer Name Margaret Dougherty							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number 919-541-2344			
							FAX Number:			
Other Agency Official Name							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number:			
							FAX Number:			
Contracting Official Name Rodney Daryl Jones							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number 919-541-3112			
							FAX Number:			

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment		Work Assignment Number 4-14 <input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:								
Contract Number EP-D-11-006		Contract Period 04/29/2011 To 03/31/2015 Base Option Period Number 3								
Contractor EASTERN RESEARCH GROUP, INC.		Title of Work Assignment/SF Site Name Literature Review								
Purpose <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval		Period of Performance From 12/29/2014 To 03/31/2015								
Comments: This is the initiation of a work assignment for the Option III period. Hours have been authorized for the work plan and also for work to begin (50 hours). This work does not duplicate any work previously performed or is currently being performed.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO (Max 2) <input type="checkbox"/>										
#	DCN (Max 5)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period		Cost/Fee		LOE						
04/29/2011 To 03/31/2015										
This Action:										
Total										
Work Plan / Cost Estimate Approvals										
Contractor VAP Dated		Cost/Fee		LOE						
Cumulative Approved		Cost/Fee		LOE						
Work Assignment Manager Name Sangdon Lee				Branch/Mail Code:						
(Signature)		(Date)		Phone Number: 919-541-4531						
				FAX Number:						
Project Officer Name Margaret Dougherty				Branch/Mail Code:						
(Signature)		(Date)		Phone Number: 919-541-2344						
				FAX Number:						
Other Agency Official Name				Branch/Mail Code:						
(Signature)		(Date)		Phone Number:						
				FAX Number:						
Contracting Official Name Rodney-Daryl Jones				Branch/Mail Code:						
(Signature)		(Date)		Phone Number: 919-541-3112						
				FAX Number:						

Statement of Work

I. Title: The Transport of Radionuclides Following a Radiological Incident: A Literature Review

Contractor Name: Eastern Research Group

Contract #: EP-D-11-006

WA#: 4-14

WAM: Sangdon Lee, 919-541-4531

II. Background:

Contamination by means of a radiological incident presents a potentially dangerous situation that has the capacity to expose both people and infrastructure to radioactive materials. The magnitude of such an event is further enhanced by the diffusive nature of radioactive particulates and the heightened presence of particle transport mechanisms within urban environments. In a relatively short period of time, contaminants may migrate to previously clean areas, increasing the extent of contamination. There are few options in regards to sequestering source emissions, atmospheric transport, or surface migration. Limiting the extent of contamination, let alone remediation, would likely require a significant amount of resources and time. As with the environment in which they are released, the source of contamination will influence the magnitude and overall behavior of radioactive material. One source of interest is Radiological Dispersal Devices (RDDs). RDDs are designed to disperse radioactive material with intentions of exposing people and contaminating surfaces. Although likely ineffective at heavily contaminating large areas or exposing vast amounts of people to radiation, RDDs are capable of contaminating targeted areas of interest, disrupting normal activities, inflicting major economic implications, and invoking fear. The radioactive material needed to construct a RDD is fairly easy to appropriate. Such materials are often found in industrial, research, and medical settings. Large-scale tests assessing the dispersion and surface transport of radioactive particles associated with RDDs are limited because their hazardous nature makes the use of outdoor releases for testing purposes very difficult. Accordingly, there is very little literature documenting the probable outcome of such an event. There is, however, an abundance of literature addressing nuclear weapons (NWs) and nuclear power plant (NPP) accident research. It is for this purpose a review of literature conducive to radiological incidents has been conducted. By characterizing NPPs and NWs, conjectures in regards to the transport of radionuclides analogous to RDDs can hopefully be made. Such data could promote more informed response and recovery decisions when responding to RDD incidents.

III. Technical Approach:

The purpose of this effort is to develop a literature review document containing overview and analysis of the current state of knowledge related to radiological contaminant transport. This document seeks to characterize radionuclide fate and transport from the previous NPP accidents and NWs and to extract the transport mechanism information that may be applicable to RDDs. Currently, the literature search is complete and the article database is available.

IV. Task:

The Contractor shall prepare an EPA format report by aggregating the resources that the EPA Work Assignment Manager will provide. The resources will include the EPA approved Quality Assurance Project Plan for literature search (In-house Literature Review of Radiological Contaminant Spreading Mechanisms approved on 6/6/2014), the articles identified from the literature search, and the article summary document. The Contractor shall develop a draft report suitable for publication as an EPA report within 2 months of award. The Contractor shall receive the EPA's review comments within 1 month after award. The Contractor shall deliver the revised report within 1 month upon receiving the EPA's review comments. The Contractor shall have periodic meetings (e.g., biweekly) to report the work progress.